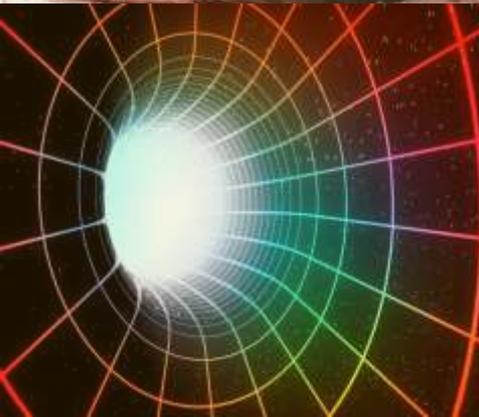
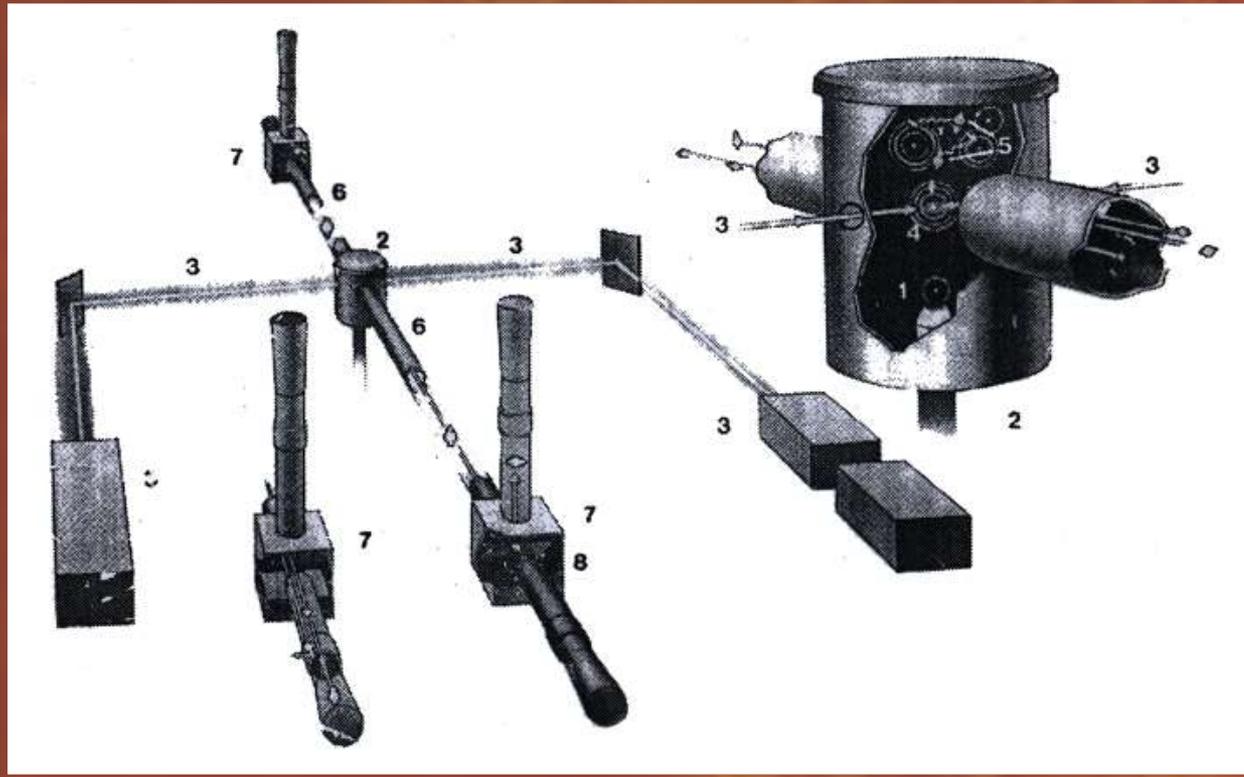


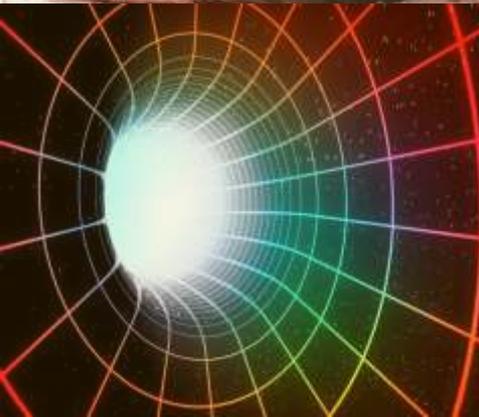
***Towards  
Nonmaterialist realism?***

**Jean Staune  
Barcelona - October 2010**



Non-Locality:  
The Aspect experiment, 1982 Orsay

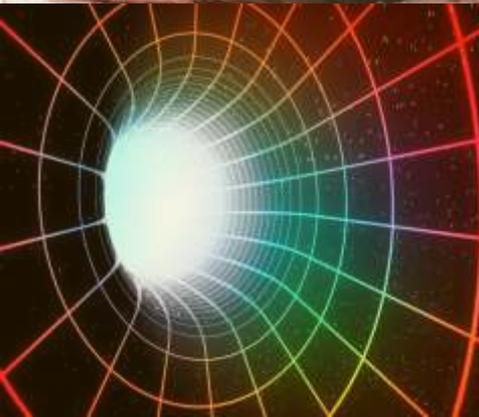
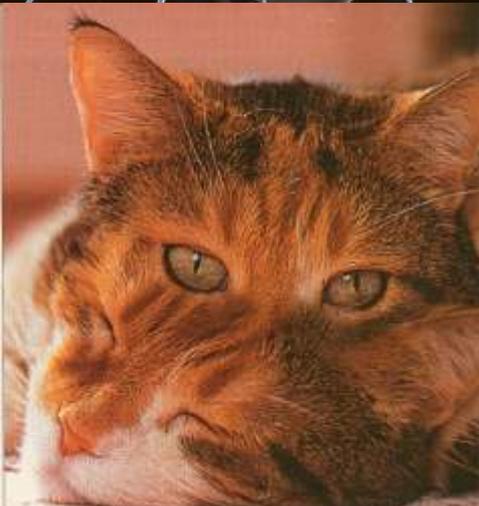




## **Non-Locality Or Non Separability ?**

**There are two ways of considering the phenomenon:**

- There is an influence which is not subject to matter nor energy (because otherwise it could not travel faster than the speed of light) and which goes from one particle to the other, in which case we speak about “Non-Locality” because it violates the locality principle as conceived by Einstein;**
- Or the two particles form one and the same object even if they are measured by instruments thousands of miles apart. In this case we would be talking more of “Non-Separability” because the two particles cannot be separated (when they have not been measured).**

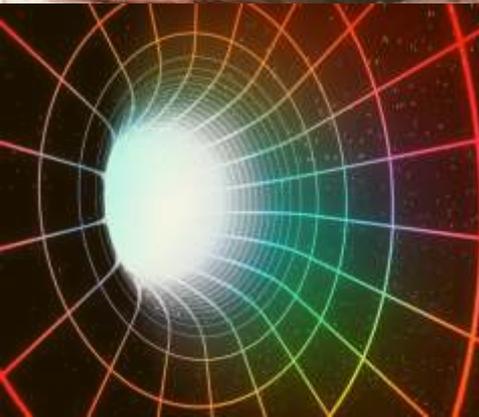


## Reality is not in space-time

In all case, as Bernard d'Espagnat states: “as far as non-separability is concerned, the two descriptions are equivalent. In either case a violation of Einsteinian separability necessitates an instantaneous interaction at a distance, either between two distinct systems or within a single and same system spread out over space”.

*Bernard d'Espagnat, «Théorie quantique et réalité »  
Pour la Science, n° 27, January 1980, p.86.*

We can see that in both cases we are invited to radically revise our beliefs about the very foundations of reality.

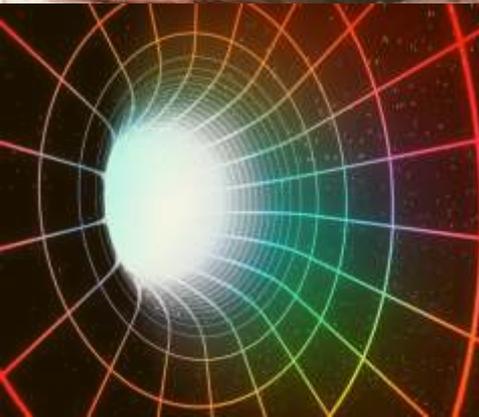


Physics has a word for the cause of these non-local correlations: entanglement.

But physics offers no story in space and time to explain or describe how these correlations happen.

Hence, somehow, non-local correlations emerge from outside space-time.

Nicolas Gisin



**Even if we accept «exotic» models such as the BBB or «Many worlds», ultimate reality is non-local at the minimum.**

**The model of parallel universes certainly doesn't enable to reduce Non-Locality to a phenomenon that would happen in time and space, regardless of which given universe.**

**The quantum potential existing in the BBB model is, by definition, non-local.**



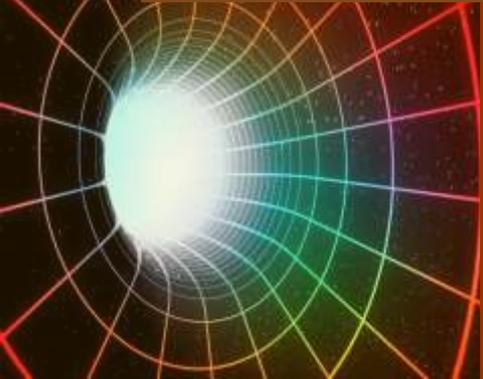
# What is ultimate reality?



ultimate reality cannot depend, for its characteristics, on the way in which it is observed.



Physics shows us, except maybe for quantum mechanics, that the reality in which we live is not just space, energy and matter, is like a rainbow.



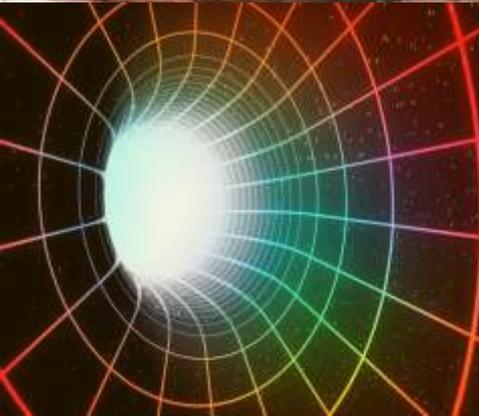
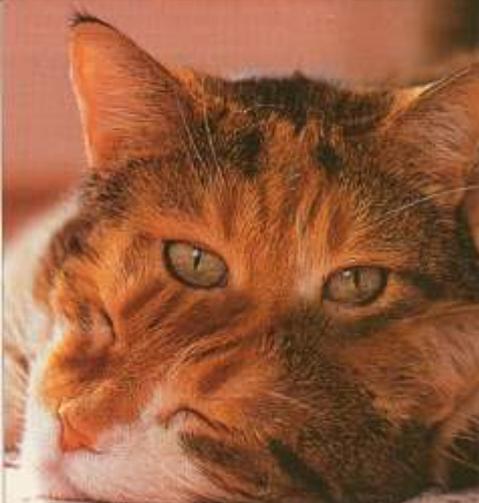
Like a rainbow, some of the elementary particles' characteristics depend on the way in which we observe them.

## Is Ultimate Reality non material?

**YES (IF models like BBB are falsified) because materials objects are like the rainbow.**

“One of the teachings of modern science of so called “matter” is the following: the “thing” if there is one, which remains preserved is not concrete but abstract. It is not something which is close to the senses but which on the contrary is a pure mathematically abstract number such as theoretical physics has revealed to us. In other terms, compared to our senses and the concepts that are familiar to us, reality is undeniably distant. In order to do justice to this very important discovery when we speak about it, I think that it is crucial to know that the word “matter” is the wrong one and that the more appropriate word “Being” should be reintroduced”.

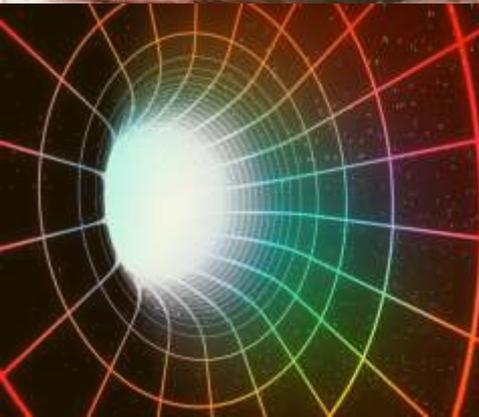
**Bernard d'Espagnat, Un atome de sagesse, p.55.**



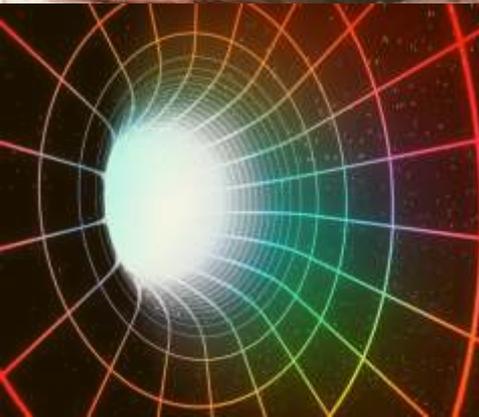
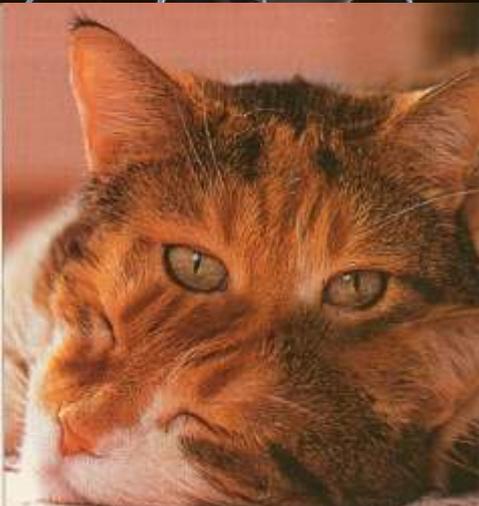


# Classical Demons and Quantum Angels: On 't Hooft's deterministic Quantum Mechanics.

[www.quantumphil.org/publications.htm](http://www.quantumphil.org/publications.htm)



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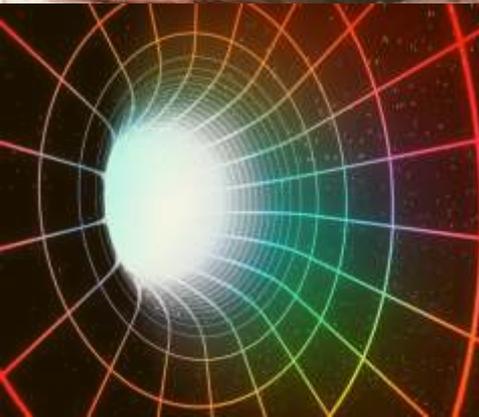
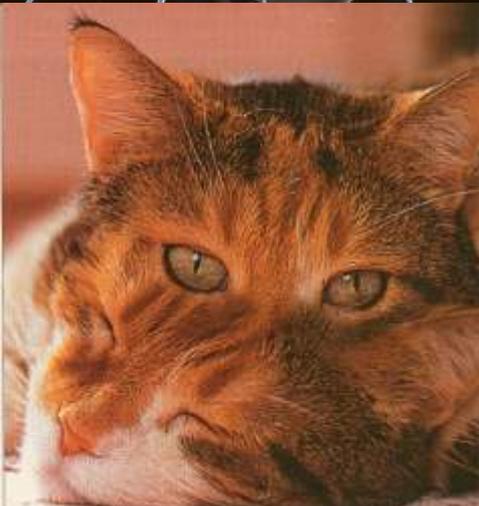


« This means that the quantum correlations have roots outside space-time and, in this sense, originate from a free and intelligent agent.

One is led to accept “the two freedoms”: the freedom of the experimenter and the freedom of Nature, and to see quantum randomness as a particular expression of free will.

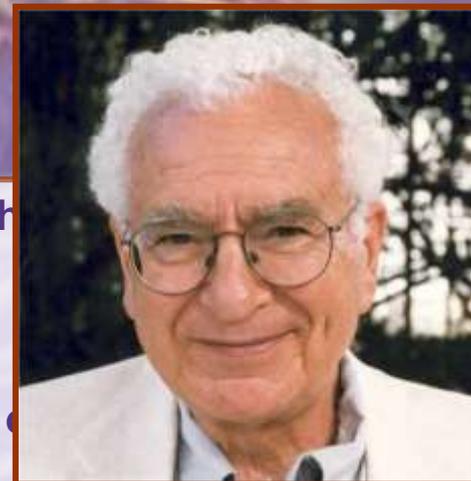
Actually I think that the experiments with moving devices described above are a stronger proof of the free-will theorem than that proposed in J. Conway and S. Kochen: If I assume to be someone rather than nothing, if I assume to share intellect and free will, if I claim in particular that the author of this article is not exclusively the Big-Bang, I have also to accept that there is some intellect behind the quantum phenomena rather than assuming that there is nothing. »

**Antoine Suarez**



## The Gell-Mann effect

“On each branch, the tree resembles Bertlemann’s described by John Bell in papers. Bertlemann is a who always wears a sock and the other of green color.

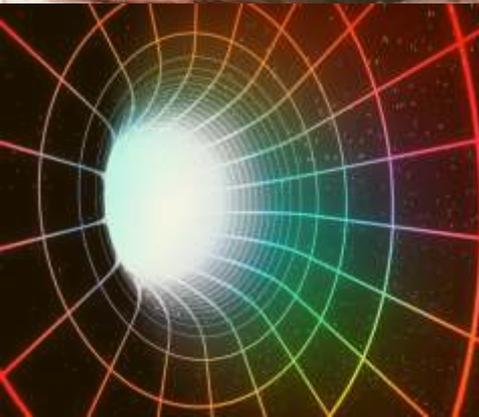
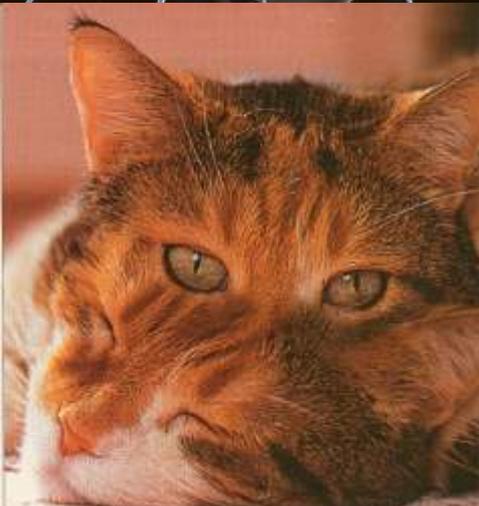


If you only see one of his feet with a green sock, you will know that his other foot wears a pink sock.

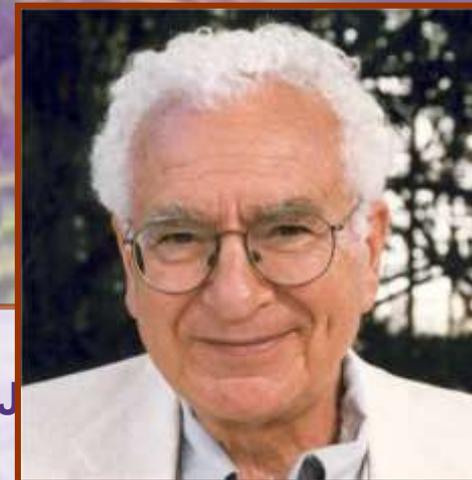
And yet no signal has been propagated from one foot to the other.

In the same way, in the experiment confirming Quantum Mechanics, no signal passes from one photon to the other; there is no action taking place from a distance. This wrong allegation, according to which the measurement of one photon immediately affects the other, leads to all kind of unfortunate conclusions”

*The Quark and the Jaguar, French edition, Page 196-197.*

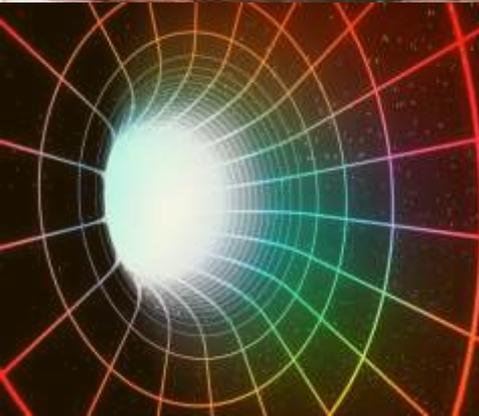
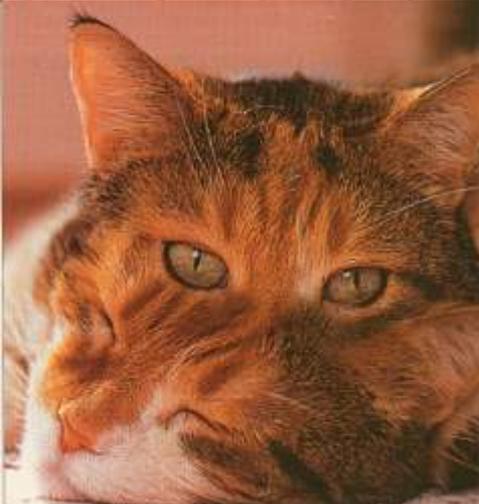


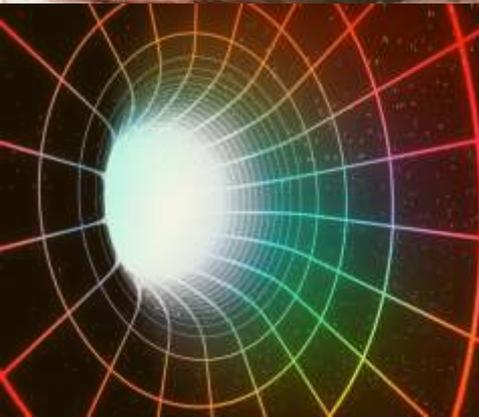
## The Gell-Mann effect



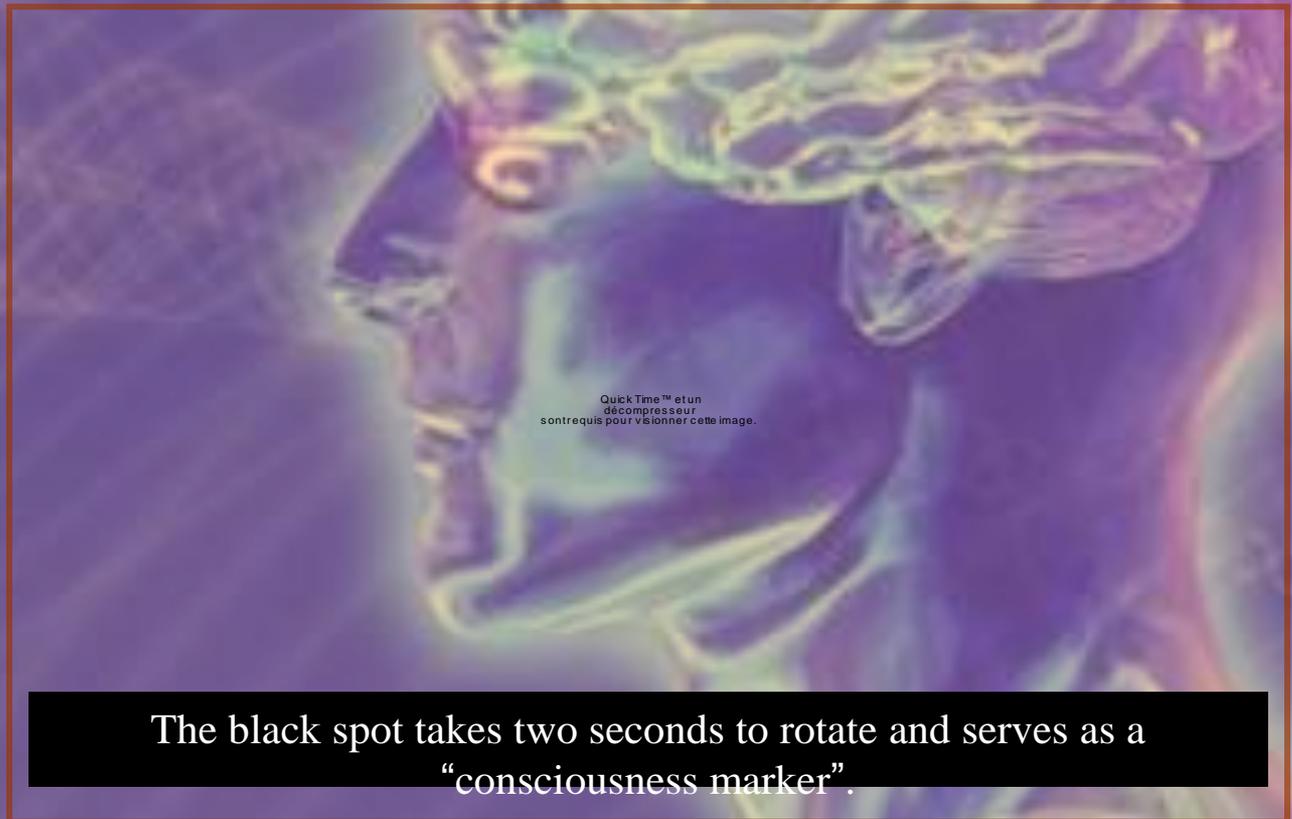
- Murray Gell-Mann has by scientific level to understand J paper “Bertlemann’s Socks Nature of Reality”, as well as to understand what experiences such as Aspect’s prove or disprove.
- Murray Gell-Mann is of good faith; I support here the postulate according to which he is not looking to deliberately misguide his readers; Murray Gell-Mann makes the analogy developed by John Bell say exactly the contrary of what it says in three different passages; even worse, Gell-Mann claims that the experiments prove the model that they precisely refute.

# Is the brain an ipod or a radio?





## Free to say no, A scientific demonstration of free will?



Potential when there is an act



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decision

Potential for aborted act

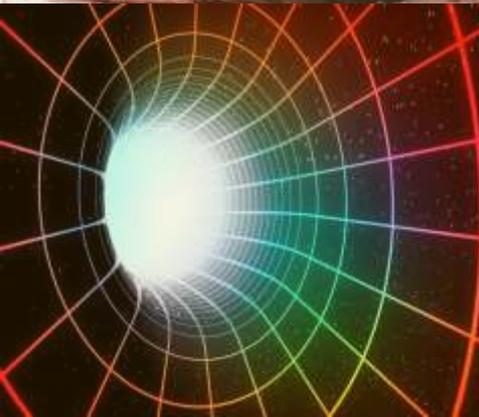
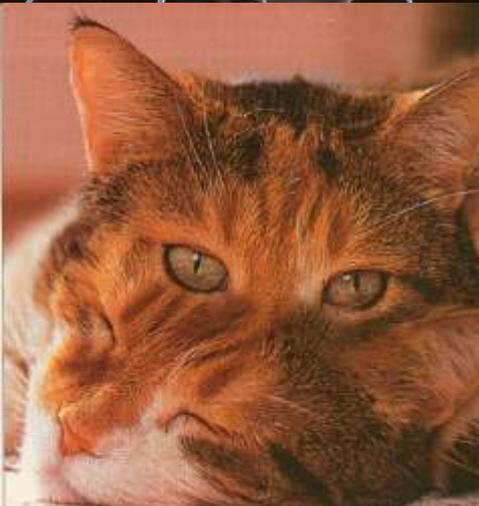


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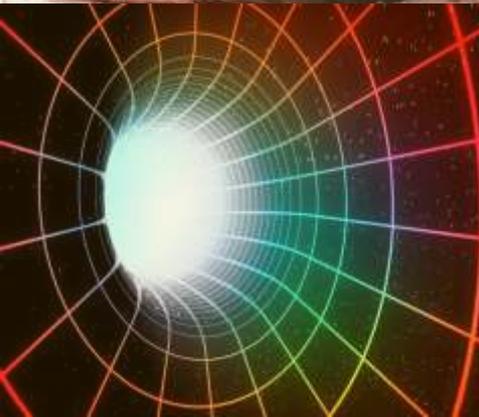
Free to say no,  
A scientific  
demonstration  
of free will?





## Why I don't believe in the critics on Libet's experiment ?

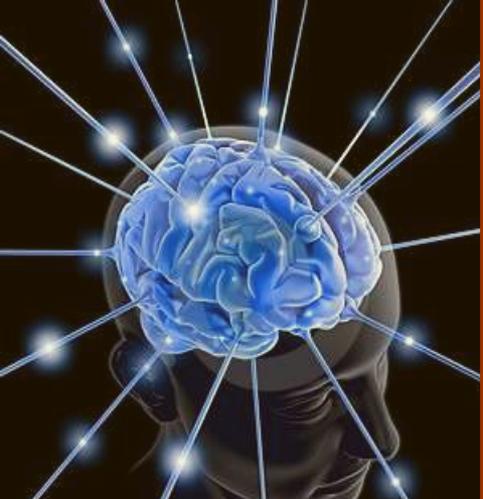
- Because you have to explain why there is an RP.
- Because there is no RP in patient when they cannot veto some movement and that RP appears when they are able to veto.
- Because the potential lateralize before the « decision time » ( No lateralization when there is a « go signal », see Mele)
- Because it's clear that the majority of our movements are «arbitrary» or «random».
- Because we have all experienced the veto mentioned by Libet.
- Because some critics (Daniel Wegner, Daniel Dennett, Patricia Churchland) are clearly the victims of a « Gell Mann effect » ie ideological presuppositions.



## Conclusion 1

On the basis of our present knowledge, it seems reasonable to propose an hypothesis according to which entanglement and consciousness are two manifestations or characteristics of ultimate reality.

And the existence of free will would be the logical consequence of such a situation ( an action of consciousness on the brain process... perhaps like in Libet's experiment ???).



## Conclusion 2

### But how to test it?

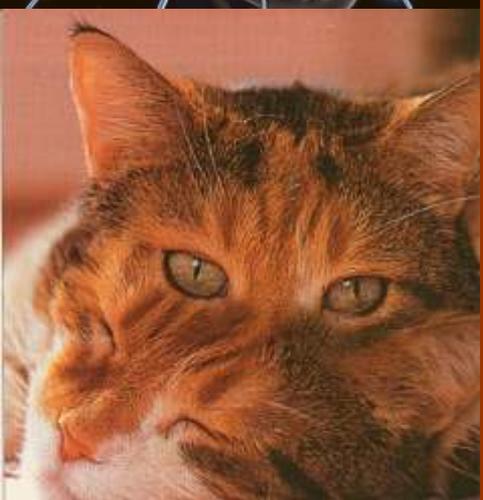
#### A- Pratical experiments:

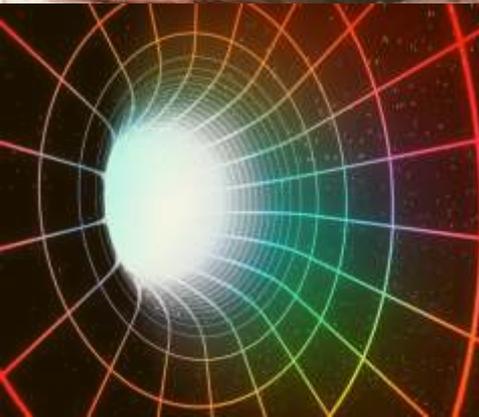
1- A real UNPROVOKED VETO experiment

2- Doing the Libet experiment on free will by associating it with the Milgram experiment (I predict that if we believe that we risk to kill someone by pushing on the button, the recording of the RP will be different). But : ethical issues...

3- Testing Libet's hypothesis on the « conscious mental field », see Libet, 2004, p. 157-183.

4- Conducting experiments on NDEs and support current research (Mario Beauregard, Sam Parnia, Pim Van Lommel), see Libet, 2004, p. 216 -219.





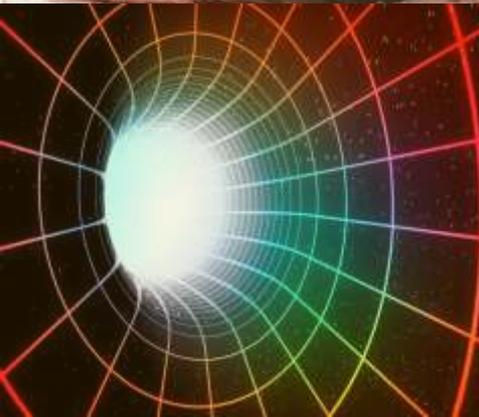
## **B- Theoretical research:**

**1- Studying and deepening the models of interaction between Quantum Physics and Neurosciences of Penrose - Hameroff, Stapp - Beauregard, Eccles - Beck or create a new one.**

**2- Conceiving and designing an experiment which permits to falsify the BBB model (in the case where the «before before» experiment doesn't hold the refutation of this model).**

**3- New approaches to entanglement (experience proposing the implication of human subjects as detectors - Gisin )**

**4- Working on possible links between Libet's and Suarez's models (Suarez's model would explain why it is necessary that a large amount of our everyday gestures are unconscious as it is postulate by Libet: it's the price to pay in order for conscious and voluntary gestures to be possible.)**



## Conclusion 3

**“As a wild, subversive and devastating theory, quantum physics has demolished the edifice policed and produced over centuries by traditional science. It projects us into a world of science fiction.**

**Republican, Marxist, Islamist and other revolutions may one day appear insignificant compared to the quantum revolution. Our socio-political organisation and our way of thought have been or will be disrupted more probably than by any other event (...) Our civilisation’s basic philosophy is still mechanical materialism. The simple ideas (even simplistic) are a force to be reckoned with and only the specialists are impressed by their failure. It took years for Galileo’s hypothesis about the earth’s orbit to be accepted. How much time is needed to shake up current beliefs? »**

**Sven Ortolì and Jean Pierre Pharabod**

***le Cantique des Quantiques***